Solar System – 3rd Grade

Rationale/Theoretical Reasoning:

**Common Misconceptions:**

    Students, especially young students, have several misconceptions about the solar system. Students have a difficult time connecting the Earth and the things on it to being a part of the solar system. This lesson should be presented only after students are familiar with and understand the Earth-Sun-Moon system.  One strategy for helping students overcome this common misconception is to place importance on the easily visible planets in the sky (e.g., Jupiter, Mars, Saturn, Venus) and how to distinguish them from stars.

    Another common misconception for students is that they have a difficult time understanding how the items in the solar system move in relation to each other.  The iPad app incorporated in this lesson allows students to see the planets in motion and how they relate to each other.

Keeley, P. and Sneider, C. (2012), *Uncovering student ideas in astronomy: 45 new formative assessment probes*. Arlington, VA: NSTA Press.

**Gardner’s Theory of Multiple Intelligences:**

The entire lesson focuses on different aspects of Gardner’s Theory of Multiple Intelligences as specified above in the “Adaptations to Meet Individual Needs” section.

Gardner, H. (2000), *Intelligence reframed: Multiple intelligences for the 21st century*. New York:  Basic Books

**Marzano’s Essential 9 Strategies that have been shown to improve student achievement:**

*Identifying Similarities and* Differences - The chart included on the worksheet also gives students the opportunity to compare and classify items as described in Marzano’s essential instructional strategy of identifying similarities and differences. Identifying similarities and differences has been proven to help students understand more complex problems and topics by analyzing them in a simpler way.

*Nonlinguistic* Representations – The physical model used in class and the diagram that students create are both representative of Marzano’s fifth essential instructional strategy of nonlinguistic representations. According to research, nonlinguistic representations have been shown to increase and stimulate brain activity.

*Cooperative Learning* - Marzano’s sixth essential instructional strategy of cooperative learning is demonstrated by the use of small group work to complete the in-class model. Cooperative learning in small groups and when used in a consistent and systematic manner has been proven through research to have a positive impact on overall learning. Groups should be varied in size and mixes and encourage positive interdependence, face-to-face interaction, social skills, accountability for the group and individuals.

Dean, C., Hubbell, E., Pitler, H., & Stone, B. (2012).  *Classroom Instruction that Works: Research-Based Strategies for Increasing Student Achievement, 2nd edition.*  ASCD McREL  
Pitler, H. Hubbell, E., & Kuhn, M. (2012).  *Using Technology with Classroom Instruction that Works, 2nd Edition*. ASCD McREL

**Vygotsky:**

Throughout the lesson plan, the modeling and scaffolding used while presenting the concept map is indicative of the importance of Vygotsky’s research and development involved in the zone of proximal development. Discussion allows students the opportunity to talk through their ideas and solidify their understanding of our solar system and the heavenly bodies within. The diagram and chart provide an effective tool for assessment as a well as a great method for tactile learners and creative students who connect with pictures more readily than simple words in print.

Vygotsky, L.S. (1978). *Mind in society. The development of higher psychological processes*. Cambridge, MA: Harvard University Press.